

of the mode in which man becomes infected with malaria by means of mosquito bites. It is the clearest and most simple account of a complex and puzzling phenomenon which we have had occasion to read. Neither are domesticated animals left out; and in this section it may be mentioned that the author follows Prof. Keller in regarding humped cattle as descended from the bantin of the Malay countries. On pp. 270-1 Hainan is misprinted Hainau, and *cygnoides* rendered *cygnoïdes*, while an altogether misleading figure of a lamb is made to serve as the representative of the handsome wild sheep of Transcaspia. A brief account of fossil animals, or rather fossil vertebrates, concludes this section of the work, which is followed by the aforesaid chapters from the pen of Miss McCracken.

Chapters on the relation of micro-organisms and sanitation, on ancient and modern man, the struggle for existence, communal life, &c., conclude a very readable book on a very technical subject. R. L.

How to Enamel: being a Treatise on the Practical Enamelling of Jewellery with Hard Enamels. By H. M. Chapin. Pp. xii+70. (New York: J. Wiley and Sons; London: Chapman and Hall, Ltd., 1911.) Price 4s. 6d. net.

This is an unpretentious little book written by a practising enameller. It describes in plain language the simplest methods of enamelling on metals, and has the merit of avoiding all air of mystery pertaining to the craft. The writing has no claims to literary finish, and the Americanisms scattered up and down the pages will come upon an English reader with something of a shock. But the writer's gift for expressing his meaning plainly, and his practical hints as to helps and hindrances in the work, obviously the result of direct personal experience, will earn the gratitude of the reader who goes to him for instruction.

In so small a compass, of course, no more than the elements of the subject are treated, and the beginner is very properly warned that only experience can teach him his craft. By omitting some not very helpful pages on transferring photographs to enamel, room might have been found for illustrating and commenting on a few fine examples of enameller's work of former ages; or, perhaps more stimulating to craftsmen, some specimens of the handiwork of such modern masters as Lalique, Thesmar, Du Suau de la Croix, Fisher, and Dawson, would have set before the beginner something to remind him that the result of all his efforts will be worth nothing unless quickened by the breath of art.

History of Geology. By H. B. Woodward, F.R.S. Pp. vi+154. (The History of Science Series.) (London: Watts and Co., 1911.) Price 1s. net.

No more appropriate writer could have been found for this condensed history of geology than the author of the recently published "History of the Geological Society of London." The personal touches which abounded in that volume have of necessity been curtailed in the treatment of a wider theme; but we meet here pleasantly with Mary Anning (p. 63) and Etheldred Benett (p. 126), side by side with Humboldt and James Hall. The book is clear and interesting in all its chapters. Stratigraphy naturally assumes most importance, since it includes the succession of organisms on the earth, and this is the aspect of geology that appeals most directly to the mind of man. Perhaps there are almost too few references to the difficulty experienced by the early geologists in making headway in countries where adherence to a Jewish system of cosmogony was held to be an act of public morals. Those who begin with Mr. Woodward's present book

may well pass on, guided by his fourth chapter, to the opening pages of Lyell's "Principles of Geology."

Petrology is treated less systematically, and few will agree with the statement (p. 143) that "the petrology of the Igneous rocks has the advantage of being a more exact science than that of Palæontology."

The pertinacity of Romé de l'Isle and the self-sacrificing life of Haüy receive only slight mention on p. 43. We should have liked some reference to the successful stand made by English-speaking geologists against the view that igneous rocks assumed a new facies with the passing of Mesozoic forms of life, and of the part played by Jull in this matter—since other living workers are mentioned—and in the development of the teaching of geology. The heading "Early Geological Maps" (p. 50) does not include William Smith or Macculloch, the maps of the former being described on p. 34, while Macculloch's Scotland has to wait until p. 80. "Progress in British Geology" occurs twice as a heading in chapter iii. These are small points of arrangement and are easy to correct. The portraits of geologists have been selected from good and thoroughly interesting originals. We feel that we must mention specially the early Lyell, the William Buckland expounding the tooth of a hippopotamus, and the thoughtful von Buch resting so naturally in the open air.

G. A. J. C.

A Treatise on Wireless Telegraphy and Wireless Telephony. By Prof. T. Mizuno. Pp. ix+563+x+208 Figs. Written in Chinese characters. (Tokyo: The Maruzen-Kabushiki-Kaisha, 1911.) Price 4.50 yen, or 9s.

SEVEN years ago Prof. Toshinojo Mizuno, of the Imperial University of Kyoto, published a popular work on wireless telegraphy and telephony. At that time it was difficult to transmit messages more than two hundred miles. The present volume is in the main a theoretical consideration of the same subject, and is intended for the use of students at the university. With the exception of the numerous formulae and equations which suggest a treatise on higher mathematics, the fact that the text is in Chinese idiographs, places this work beyond the reach of European students. The references to Maxwell and Hertz in the early chapters indicate that the author has started on good foundations. Following these, references are made to the work of many investigators in England, Germany, Italy, and other European countries.

The description of instruments, which are illustrated diagrammatically, concludes with a reference to the telephonic relay of Mr. S. Brown, which shows that the writer is well up to date in regard to modern inventions. The author says but little about his own work, or the contributions to improvements in practical wireless telegraphy made in his own country, but these exist. The whole work may be compared to a play of Shakespeare with actors in Eastern costume, but it also suggests that Japan is abreast with the abstruse researches of the West in connection with which she has made advances.

Les Machines à écrire. By J. Rousset. Pp. 177. "Encyclopédie Scientifique des Aide-Mémoire." (Paris: Gauthier-Villars and Masson et Cie., n.d.) Price 2.50 francs.

In this little book the author dissects the typewriter of commerce, and in a series of chapters shows how in different machines each function is performed. There are fifty-eight figures. The descriptions and figures are clear, and the book should fulfil its purpose. It is a little difficult, however, to see what this purpose is, for ingenious as the mechanism of

typewriters may be, it is all visible, and anyone with any sense of mechanics can see it all for himself and understand it, and, moreover, in the larger towns at any rate, there is no difficulty in finding all the better-known examples, and willing expositors in the shops in which they are sold. Still, it is well that the subject should be dealt with systematically.

Lissajous'sche Stimmungskurven in stereoskopischer Darstellung. By J. W. N. Le Heux. Pp. 8+18 plates [loose cards in case]. (Leipzig: Johann Ambrosius Barth, 1911.) Price 6 marks.

THE author refers to the interest which Lissajous figures have in physics and mathematics, more especially when presented in their most attractive form so as to appear in stereoscopic relief. As is well known, pairs of figures otherwise identical but slightly different in phase appear when viewed in a stereoscope (or by accustomed eyes without a stereoscope) to blend together and form a single picture in three dimensions. The author discusses eighteen plates as follows, three of ratio 1:1, five of 1:2, two of 2:3, three of 3:4, two of 3:5, and two of 4:5 ratios. Some show a single line only, others give ten or more closely spaced lines. The plates are so clear that the stereoscopic effect is perfectly seen without a stereoscope.

Europe in Pictures. By H. Clive Barnard. Pp. 64. (London: A. and C. Black, 1911.) Price 1s. 6d.

THE pictures in this book will serve admirably to illustrate geography lessons in schools. The text is scarcely so suitable for school purposes; it is arranged unattractively and in such a manner that the plates often have little to do with the letterpress facing them.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

A Pseudo-Aurora.

FOR some time I have been staying at the Kurhaus, St. Beatenberg, Switzerland, and my window commands a view of the Bernese Oberland from the Wetterhorn to the Balmhorn. The Eiger Mönch, Jungfrau, and Blümlisalp stand out most clearly above the lower mountains in front of them, of which the Faulhorn and Mesen are members. There has been a continuance of hot and dry weather for many weeks, and there have been occasional thunderstorms with both forked and sheet lightning. On the night of August 21, about ten o'clock, semicircular flashes of light shot up apparently behind the Mönch, quivered for a few seconds, and then disappeared. I counted twenty-eight in a minute. The light was sometimes intense at a central point, which was steady, and from this a quivering glow proceeded and lighted up from 15° to 20° of the horizon. The outline of the Jungfrau group could occasionally, but not always, be seen.

The appearance seemed to me very like an aurora borealis which I saw in Scotland in the 'fifties, but the centre of the light here was to the south-west of where I stood. I do not know how long the light had appeared before I saw it, but it continued to flash with great brilliancy for about twenty minutes. It then became less bright, and did not shoot so high into the sky, but extended laterally to the south for about 30° behind the Oberland chain. After half an hour more these died away, and on looking out two hours later nothing was to be seen. I am informed that a similar phenomenon was visible on the previous night, but was less brilliant. The resemblance to a true aurora was so great that I have thought it might be worth description.

LAUDER BRUNTON.

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Rainless Thunderstorms.

DURING the long-continued drought local storms have been reported here and there, and have been described as rainless. Will you or any of your readers explain this phenomenon? I have always imagined that raindrops played a large part in the manufacture of atmospheric electricity, but I suppose that there are electrical storms in rainless countries.

A. A. M.

Hove, August 16.

THE point raised in the foregoing letter is one of considerable interest in connection with the origin of the electrical phenomena of thunderstorms. The fact that thunderstorms are usually accompanied by clouds of a special character and heavy rain is common knowledge, and after Wilson's discovery of the difference in the effectiveness of the positive and negative ions as condensation nuclei it was generally assumed that condensation produced the necessary separation of the positive and negative electricity, and was an essential feature in thunderstorms. Simpson in his recent paper on the "Electricity of Rain and its Origin in Thunderstorms" makes splashing and breaking up of actual raindrops a necessary part of the mechanism of a thunderstorm.

Published accounts of rainless thunderstorms are not common, but one was contributed by Mr. E. J. Lowe to NATURE for September 7, 1893. He says, "On August 9 (at Shirenewton, near Chepstow) there was no rain but more lightning than I had seen since the memorable storm of August 9, 1843. It commenced at 9 p.m., and lasted five hours. From very frequent counting there could not have been less than 10,000 flashes."

More recently, Captain A. Simpson, of the s.s. *Moravian*, described a thunderstorm near Cape Verde lighthouse, when there was no rain nor even lower clouds. "For fully an hour the sky was one blaze of lightning, and the wire ropes, mast heads, yard arms, derrick ends, &c., were lighted up." See M.O. Pilot Chart of the North Atlantic and Mediterranean, April, 1903.

E. G.
Meteorological Office, South Kensington,
London, S.W., August 22.

Habits of Dogs.

CAN any of your readers inform me whether it is common for dogs to eat wasps, or if it is likely to prove injurious? A young bulldog of mine ("Billy") now finds his chief amusement in catching flying wasps with his mouth, and I think he must swallow them, as they generally vanish, though occasionally I have found the corpse on the floor. It seems evident from the dog's demeanour that the sting makes some impression; he shakes his head and licks his lips energetically, and occasionally runs to a corner and rolls on his back kicking. But the next moment he is off after another. That he is not invulnerable appears further from the fact that yesterday, after treading on a wasp, he lifted a paw and limped on three legs, until I applied ammonia. There was a tender spot where the skin had been grazed between the toes; possibly the sting lit there.

The same bulldog had another curious habit. When I was on the Cornish coast he spent much of his time in rolling boulders backwards along the beach or in shallow water. His method was to embrace the stone with his powerful fore-arms and fling it towards his hind paws, licking it well over at every pause. As he generally chose the biggest stone he could well move, it was laborious work; but he was tremendously enthusiastic about it. In the garden too, if not watched, he would drag the stones from the rockery across the lawn. This pursuit has now lapsed from lack of opportunity, though he occasionally practises on a stray brick or flower-pot.

It testifies to the hardness of the national breed that "Billy" was undamaged by a "head-on" collision with a motor-car which he had charged. I saw him knocked forward, and then struck by the wheel, but at my cry of horror he came galloping back to me as cheerful as ever. The driver had doubtless put on the brake as soon as possible, for he kindly stopped a moment later to see if the dog had been hurt.

A. EVERETT.

Woking, August 21.